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Electrochemical properties and catalytic activity in the ethylene polymerization processes of nickel complexes with 2,2′-bipyridine in the presence of ortho-phosphinophenol derivatives

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Abstract

© 2015, Pleiades Publishing, Ltd. Electrochemical properties of the [NiBr2(bpy)2] complex, where bpy = 2,2′-bipyridyl, have been studied in the presence of derivatives of ortho-phosphine phenol: 2-diphenyl phosphanyl-4-methyl phenol CH3C6H3(PPh2)OH (1), 2-diphenyl phosphanyl-4-methylphenyldiphenyl phosphinate CH3C6H3(PPh2)OP(O)Ph2 (2), and 2-diphenylphosphoryl-4-methyl phenol CH3C6H3(P(O)Ph2)OH (3). It is found that interaction of products of electrochemical reduction of complex [NiBr2(bpy)2] with 1 and 2 results in formation of active catalysts of the process of homogeneous oligomerization/polymerization of ethylene.

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Keywords

2,2′-bipyridyl, cyclic voltammetry, electrochemistry, ethylene, nickel complexes, ortho-phosphine phenols, polymerization, preparative electrolysis